

## POLARIZATION IMAGES OF COMET HALLEY

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Observations from two dates 16<sup>h</sup>50<sup>m</sup> GMT 5 January 1986 and 16<sup>h</sup>10<sup>m</sup> GMT 7 January 1986 are presented. The images were obtained with the Durham imaging polarimeter on the 1-m telescope of the Wise Observatory, Israel. The observations were made through a broad-band filter centered at 0.67 microns with a 0.17-micron effective bandwidth. This wavelength region should be dominated by continuum radiation. The intensity images cover 46 x 78 arcseconds.

Figure 1 shows the intensity image from 5 January in logarithmic form. A prominent anti-solar jet is readily seen. The polarization image (Fig. 2) shows that the linear polarization is higher on the whole of the sunward side of the nucleus. The jet shows up as a blob of increased polarization separated from the nucleus. There is no significant deviation of the direction of polarization from that expected from single scattering. The increase in percentage polarization could be due to a number of factors, smaller dust grains, increased dust-to-ratio, or a change in dust composition.

Figure 3 shows the intensity image from 7 January in logarithmic form. A number of dust features can be observed, with a major one pointing southeast. The percentage polarization image (Fig. 4) shows that this southeast jet produces a large excess of polarization.

If the period of rotation of dust features is taken to be 2.2 days, as is often suggested, then the two images differ by almost one complete rotation; yet the character of the two images is completely different.

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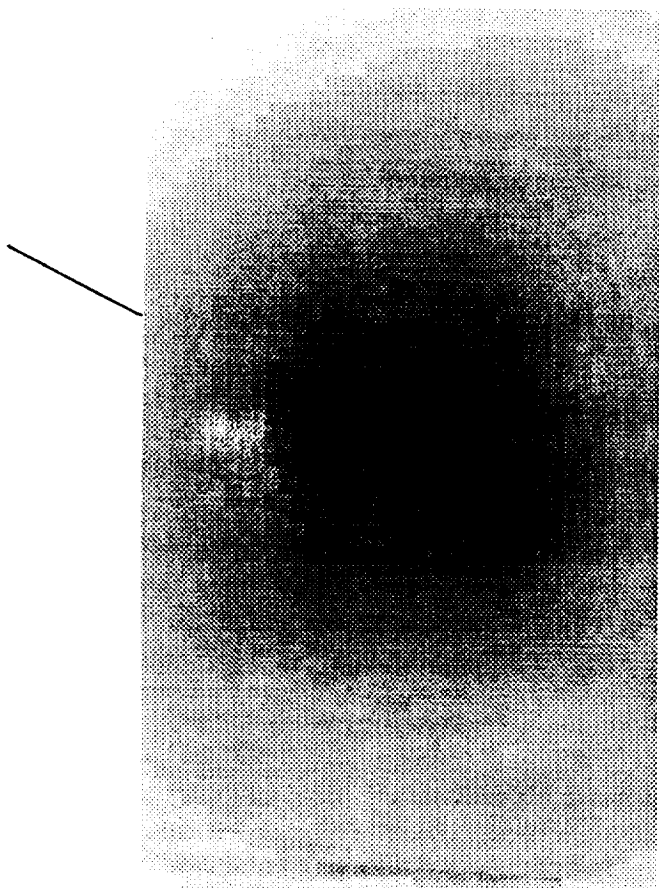


Figure 1. The intensity image from January is plotted in logarithmic form. North is up and east is to the left. The solar direction is southwest as indicated. The field is  $46 \times 78$  arcseconds.

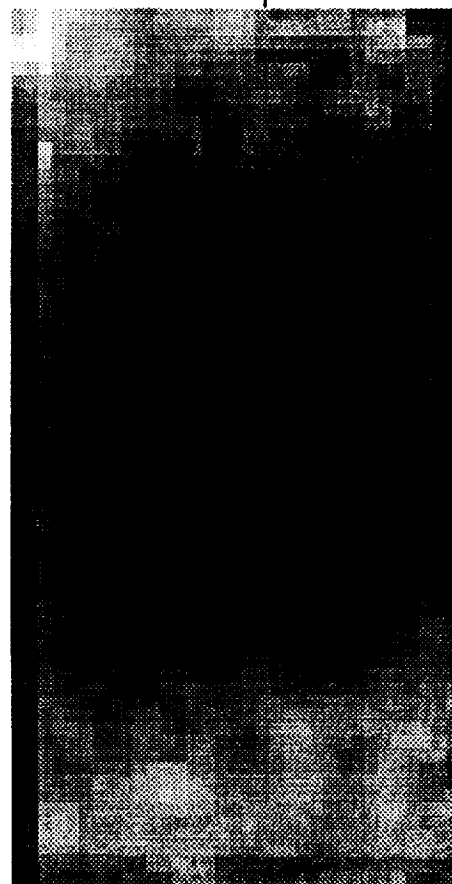


Figure 2. This shows the polarization image from 5 January. The percentage of linear polarization is plotted at each point. The gray-scale ranges from 5.9 (white) to 12.9% (black). Tick marks indicate the position of the nucleus seen in the intensity image. The scale is the same as in Figure 1. Edge effects are artifacts.

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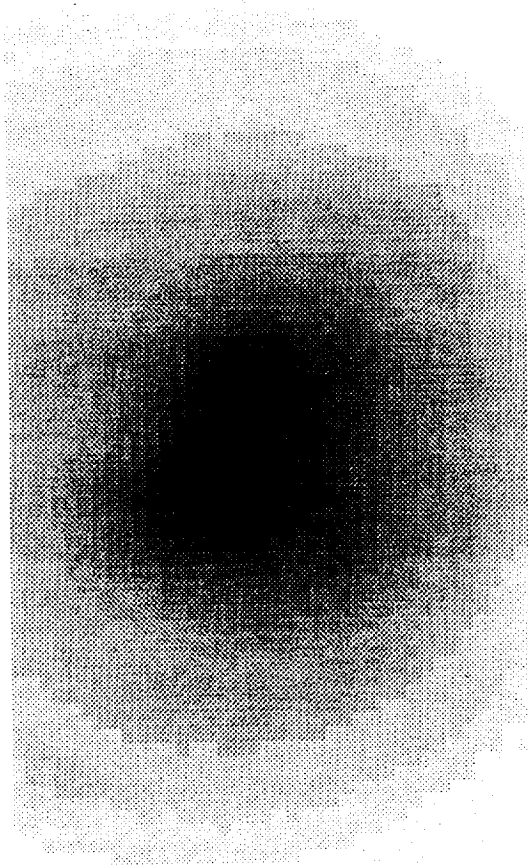


Figure 3. The intensity image from 7 January is plotted in logarithmic form. See Figure 1 for description.

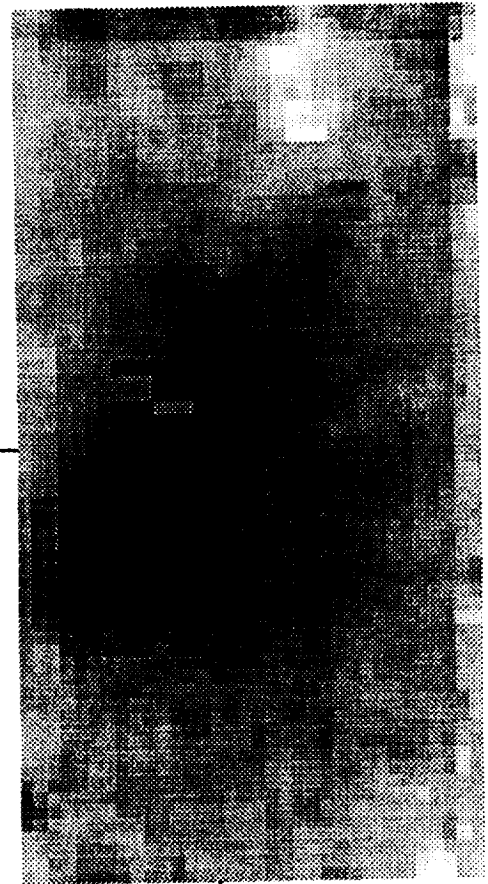


Figure 4. The polarisation image from 7 January is shown. The gray-scale indicates the percentage linear polarisation from 2.5 (white) to 18.4% (black). See Figure 2 for description.